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09/973,443	10/09/2001	Craig David Johnson	68.0191	5949

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EXAMINER
GAY, JENNIFER HAWKINS

ART UNIT	PAPER NUMBER
3672	

DATE MAILED: 04/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/973,443	JOHNSON, CRAIG DAVID	
	Examiner	Art Unit	
	Jennifer H Gay	3672	

-- The MAILING DATE of this communication appears on the cover sh t with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 February 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4-9, 15-17, and 19-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Cornette et al. (US 5,392,850).

Regarding claim 1: Cornette et al. discloses a wellbore completion system that includes the following features:

- A plurality of gravel pack sections (18, 20, and 22) located within the well. *It should be noted that the gravel pack sections would inherently impose a predetermined radial flow restriction upon the production fluid flowing through the gravel pack since the operator would know the density of the sections based on the type and size of gravel used; the density of the gravel directly affects the flow rate through the section.*
- One of the sections (22) creates a flow restriction different from the remaining sections (18 and 20). *It should be noted that fluid flow out of the ported sub (38) and through section 22 is different from the flow through the other two sections and will be substantially radial flow through at least a portion of the section.*

Regarding claim 2: The sections are comprised of a gravel material with a permeability within a predetermined range. *It should be noted that the gravel pack sections would inherently have a permeability within a predetermined range since the operator would know the density of the sections based on the type and size of gravel used; the density of the gravel directly affects the permeability of the section.*

Regarding claim 4: The system further includes a plurality of screens (34 and 36) that imposed a predetermined flow restriction on the production fluid. *It should be noted that the*

operator would known the flow restriction through a wellbore screen prior to insertion into the wellbore thus would use a screen that had a flow restriction that was within the range desired for the wellbore.

Regarding claim 5: The system further includes a plurality of screens (34 and 36) that imposed a predetermined flow restriction on the production fluid. *It should be noted that the operator would known the flow restriction through a wellbore screen prior to insertion into the wellbore thus would use a screen that had a flow restriction that was within the range desired for the wellbore. It should be further noted that the flow restriction through a screen directly affects the pressure profile of the screen.*

Regarding claim 6: In column 3, lines 1-6, Cornette et al. discloses that the screens used in the above system are of conventional types that are well known in the art. On page 16 of the instant application, applicant discloses that sand packed screens, wire mesh filled screens, and screens with tortuous paths are well known in the art; therefore, screens of Cornett et al. could be any of the above types of screens.

Regarding claim 7: The system further includes a packer (30).

Regarding claim 8: The system further includes production tubing (42) in communication with the sand screen.

Regarding claim 9: It should be noted that the gravel pack sections would inherently have a predetermined range of flow conductivities since the operator would know the density of the sections based on the type and size of gravel used; the density of the gravel directly affects the flow conductivity through the section.

Regarding claim 15: Cornette et al. discloses a wellbore completion system that includes a gravel pack system that has a varying flow restriction along its length. As noted in column 2, lines 50-65, gravel layer 22 has a reduced permeability compared to layers 18 and 20 thus the gravel pack varies in flow restriction and density.

Regarding claims 16 and 17: The system further includes a plurality of screens (34 and 36) that imposed a predetermined flow restriction on the production fluid. *It should be noted that the operator would known the flow restriction through a wellbore screen prior to insertion into the wellbore thus would use a screen that had a flow restriction that was within the range*

desired for the wellbore. It should be further noted that the flow restriction through a screen directly affects the pressure profile of the screen.

Regarding claim 19: Cornette et al. discloses a method for completing a wellbore that involves the step of providing a completion system in the wellbore where the system includes a gravel pack (18, 20, and 22) where the gravel pack imposes a flow restriction on the production fluid flowing through the gravel pack.

Regarding claim 20: As noted in column 2, lines 50-65, gravel layer 22 has a reduced permeability compared to layers 18 and 20 thus the gravel pack varies in density.

Regarding claim 21: The system further includes a plurality of screens (34 and 36) that imposed a predetermined flow restriction on the production fluid. *It should be noted that the operator would known the flow restriction through a wellbore screen prior to insertion into the wellbore thus would use a screen that had a flow restriction that was within the range desired for the wellbore.*

Regarding claim 22: In column 3, lines 1-6, Cornett et al. discloses that the screens used in the above system are of conventional types that are well known in the art. On page 16 of the instant application, applicant discloses that sand packed screens, wire mesh filled screens, and screens with tortuous paths are well known in the art; therefore, screens of Cornett et al. could be any of the above types of screens.

Regarding claim 23: Cornette et al. discloses a method for completing a wellbore that involves the step of providing a completion system in the wellbore where the system includes a gravel pack (18, 20, and 22) where the gravel pack imposes a flow restriction on the production fluid flowing through the gravel pack. As noted in column 2, lines 50-65, gravel layer 22 has a reduced permeability compared to layers 18 and 20 thus the gravel pack varies in flow restriction.

Regarding claim 24: The system further includes a plurality of screens (34 and 36) that imposed a predetermined flow restriction on the production fluid. *It should be noted that the operator would known the flow restriction through a wellbore screen prior to insertion into the wellbore thus would use a screen that had a flow restriction that was within the range desired for the wellbore.*

Regarding claim 25: Cornette et al. discloses a method for completing a wellbore that involves the step of providing a plurality of sand screen sections in a wellbore where the screen defines an annulus between the screen and the wellbore. The screens impose a predetermined flow restriction on the production fluid. *It should be noted that the operator would known the flow restriction through a wellbore screen prior to insertion into the wellbore thus would use a screen that had a flow restriction that was within the range desired for the wellbore.* Further, in column 3, lines 1-6, Cornett et al. discloses that the screens used in the above system are of conventional types that are well known in the art. On page 16 of the instant application, applicant discloses that sand packed screens, wire mesh filled screens, and screens with tortuous paths are well known in the art; therefore, screens of Cornett et al. could be any of the above types of screens.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3, 10-14, 18, and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cornette et al. (US 5,392,850) in view of Bode et al. (US 2002/0157837).

Regarding claim 3: Cornette et al. discloses all of the limitations of the above claims except for the gravel pack section imposing a greater pressure drop at the heel of a horizontal wellbore and progressively less of a pressure drop at the toe end of the wellbore.

In paragraph 0008, Bode et al. teaches a horizontal wellbore where a well screen imposes a higher flow rate, i.e. a higher pressure drop, at the heel of the wellbore than at the toe.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have formed the gravel pack section of Cornette et al. so that it imposed a greater pressure drop at the heel of a horizontal wellbore and progressively less of a pressure drop at the toe end of the wellbore as taught by Bode et al. in order to have caused formation

fluid located in zones closer to the toe of the wellbore to migrate toward the heel for easier production.

Regarding claim 10: Cornette et al. discloses a system for completing a wellbore that includes the following features:

- A production tubing (42) that includes a plurality of screen sections (34 and 36) that allow production fluid to flow into the tubing.
- Each of the sections has a flow restriction that imposes a predetermined flow restriction on the production fluid. *It should be noted that the operator would known the flow restriction through a wellbore screen prior to insertion into the wellbore thus would use a screen that had a flow restriction that was within the range desired for the wellbore. It should be further noted that the flow restriction through a screen directly affects the pressure profile of the screen.*
- In column 3, lines 1-6, Cornett et al. discloses that the screens used in the above system are of conventional types that are well known in the art. On page 16 of the instant application, applicant discloses that sand packed screens, wire mesh filled screens, and screens with tortuous paths are well known in the art; therefore, screens of Cornett et al. could be any of the above types of screens.

Cornette et al. discloses all of the limitations of the above claims except for the flow restriction through one of the screens being different from that of the other.

In paragraph 0039, Bode teaches a system with multiple flow restrictors whose restriction therethrough be individually controlled.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have formed one of the screens of Cornette et al. so that it flow restriction was different from the other as taught by Bode in order to have reduced the effect of coning in the well.

Regarding claims 11 and 18: Cornette et al. discloses all of the limitations of the above claims except for the system being located in a horizontal wellbore. In paragraphs 0006, 0062, and 0063, Bode et al. teaches a gravel packing system that is located in a horizontal wellbore. It

would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have used the system of Cornette et al. in a horizontal wellbore as taught by Bode et al. in order to have prevented the collapse of the horizontal wellbore (see paragraph 0006).

Regarding claim 12: The system further includes a gravel pack system that has a varying flow restriction along its length. As noted in column 2, lines 50-65, gravel layer 22 has a reduced permeability compared to layers 18 and 20 thus the gravel pack varies in flow restriction.

Regarding claim 13: Cornette et al. discloses a wellbore completion system that includes a gravel pack system that has a varying flow restriction along its length. As noted in column 2, lines 50-65, gravel layer 22 has a reduced permeability compared to layers 18 and 20 thus the gravel pack varies in flow restriction.

Regarding claim 14: The system further includes a plurality of screens (34 and 36) that imposed a predetermined flow restriction on the production fluid. *It should be noted that the operator would known the flow restriction through a wellbore screen prior to insertion into the wellbore thus would use a screen that had a flow restriction that was within the range desired for the wellbore.*

Regarding claim 26: Cornette et al. discloses a method for completing a wellbore that involves the step of providing a completion system in the wellbore where the system includes a sand screen (34 and 36) and a gravel pack (18, 20, and 22).

Cornett et al. discloses all of the limitations of the above claims except for developing a simulation model for designing the above system so that the system creates the desired flow restriction to provide substantially equal drainage along the length of the well.

However, it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have developed a simulation model to design the above system in order to have ensured that the designed system would provided the desired affects prior to testing it in a wellbore thus reducing the cost of the operation.

It would have been considered further obvious to one of ordinary skill in the art, at the time the invention was made, to have designed the system to provide substantially equal drainage along the length of the well in order to have prevented coning which is known in the art to be an undesirable occurrence as taught in paragraph 0008 of Bode et al.

Regarding claims 27 and 29: The gravel pack of the above system has a varying density along the length of the wellbore. As noted in column 2, lines 50-65, gravel layer 22 has a reduced permeability compared to layers 18 and 20 thus the gravel pack varies in density.

Regarding claims 28 and 29: In column 3, lines 1-6, Cornette et al. discloses that the screens used in the above system are of conventional types that are well known in the art. On page 16 of the instant application, applicant discloses that sand packed screens, wire mesh filled screens, and screens with tortuous paths are well known in the art; therefore, screens of Cornett et al. could be any of the above types of screens.

Response to Arguments

5. In view of applicant's amendment, the objections to the drawings and specification have been withdrawn.

6. Applicant's arguments with respect to claims 10-14 have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant's arguments filed 25 February 2003 have been fully considered but they are not persuasive.

In response to applicant's argument that Cornette et al. does not teach that radial flow in one gravel pack section is different from the other section, the examiner disagrees. The permeability of gravel pack section 22 is different from the permeability of the other two sections (18 and 20), therefore the flow restriction through that section is different from the other two sections. Further, while the examiner acknowledges that the disclosed purpose of changing the permeability of section 22 is to restrict flow into sections 18 and 20, fluid flow out of ported sub 38 and through section 22 will be substantially radial through at least a portion of the section.

In response to applicant's argument that Bode does not teach gravel pack sections with different substantially radial flow restrictions, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have

suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). The examiner notes that Bode was not used to teach this feature as it can be found in Cornette et al.

In response to applicant's argument that Bode does not teach screens having different flow restrictions, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). It is noted that, in regards to the rejection of claims 11 and 18, the examiner did not indicate that Bode did teach screens having different flow restrictions. However, in light of the new rejection of claims 10-14, the examiner notes that Bode does teach a series of flow restrictors whose restriction therethrough be individually controlled.

In response to applicant's argument that neither Cornette et al. nor Bode teach developing a simulation completion model for the well that provides a desired flow restriction per well length to provide substantial equal drainage rates within the well production zone, the examiner acknowledges that this feature is not specifically taught. However, the examiner considers the development of such a model and then its use to create the wellbore system to be obvious. Mechanical systems, and the process to use that system, are not created without the use of a simulation model since it is necessary to know how to design the system to achieve the desired results. In this instance, one of ordinary skill in the art would know to use such a model to obtain a system that achieves the desired downhole effect such as preventing coning as described in paragraph 0008 of Bode.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer H Gay whose telephone number is (703) 308-2881. The examiner can normally be reached on Monday-Thursday, 6:30-4:00 and Friday, 6:30-1:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on (703) 308-2151. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7687 for regular communications and (703) 305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.

David Bagnell
Supervisory Patent Examiner
Art Unit 3672

JHG
April 7, 2003